(No Model.)

E. & A. WELSH.

POST AND PILE DRIVER.

No. 363,706. Patented May 24, 1887.

Fig. 1.

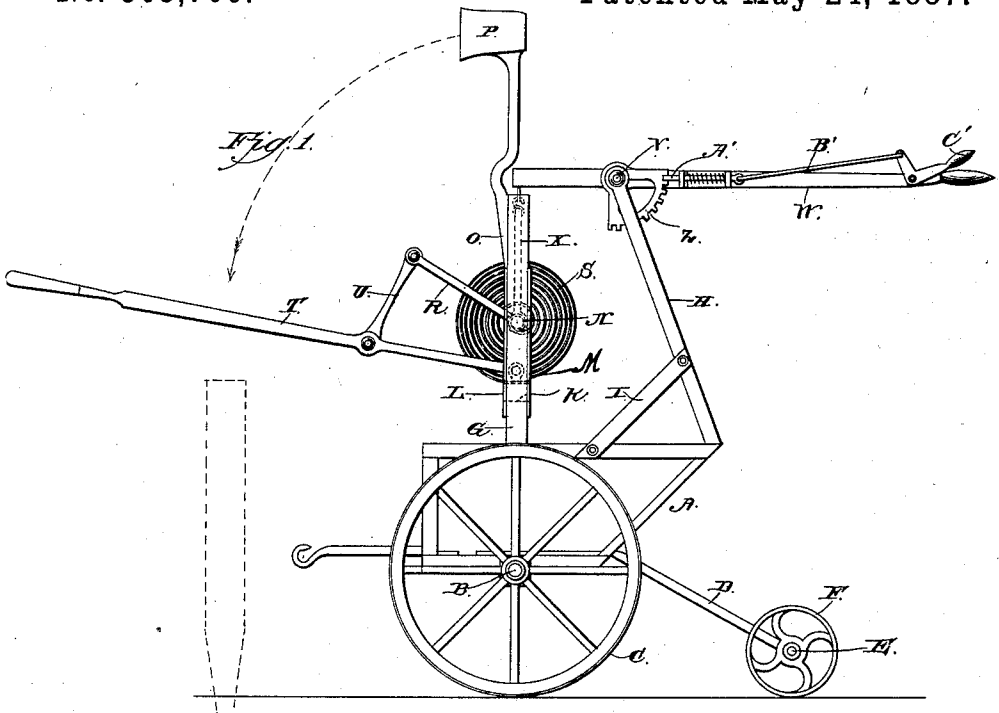


Fig. 2.

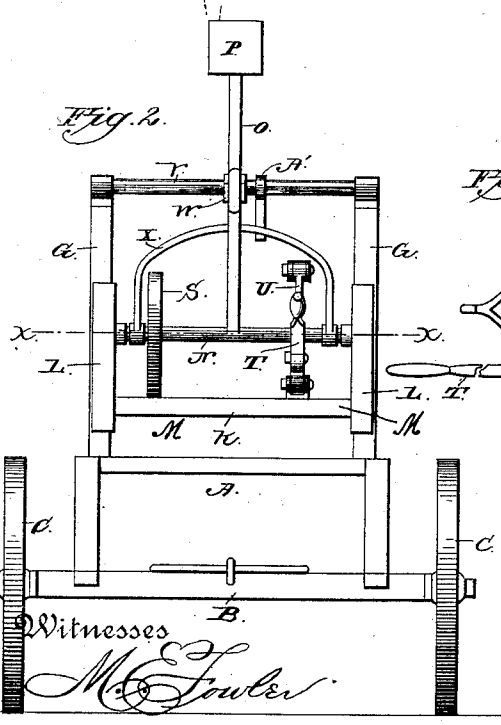
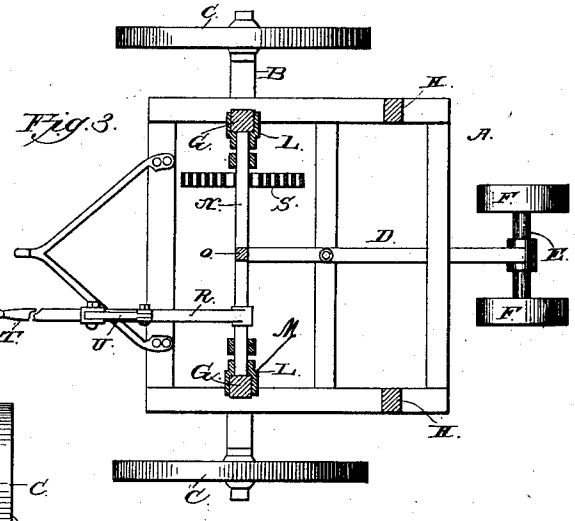


Fig. 3.



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UNITED STATES PATENT OFFICE.

ELMER WELSH AND ARTEMUS WELSH, OF SCOTTDALE, PENNSYLVANIA.

POST OR PILE DRIVER.

SPECIFICATION forming part of Letters Patent No. 363,706, dated May 24, 1887.

Application filed January 28, 1887. Serial No. 225,798. (No model.)

To all whom it may concern:

Be it known that we, ELMER WELSH and ARTEMUS WELSH, citizens of the United States, residing at Scottdale, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Post or Pile Drivers, of which the following is a specification.

Our invention relates to an improvement in post or pile drivers; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a post and pile driver embodying our improvements. Fig. 2 is a front elevation of the same. Fig. 3 is partly a top plan view and partly a horizontal section taken on the line *x x* of Fig. 2.

A represents a truck, having the front axle, B, provided with the large supporting-wheels C, the rearward and downward projecting reach D, the rear axle, E, attached to the lower end of the said reach, and the small supporting-wheels F, journaled on the ends of the rear axle. From the upper side of the truck, and directly in line with the front axle, project a pair of vertical standards, G. From the rear side of the truck, on the upper side thereof, project a pair of arms, H, which are inclined toward the standards G, and are secured in position by means of the inclined braces I.

K represents a horizontal cross-bar, which connects the standards G, the said cross-bar being provided at its ends with vertically-extending slide-boxes L, which engage the opposing sides of the standards G, the said cross-bar and slide-boxes constituting a vertically-movable cross-head, M.

N represents a horizontal rock-shaft, which is journaled in the slide-boxes L. From the said rock-shaft projects an arm, O, to the outer end of which is attached a suitable hammer-head, P.

R represents an operating-arm, which projects from one side of the rock-shaft at an angle of about forty-five degrees with reference to the arm O. A volute spring, S, has its inner end attached rigidly to the rock-shaft, and the outer end of the said spring is attached rigidly to the cross-bar K. The said spring, in its tendency to uncoil, raises the arm O, carrying the hammer-head, to a vertical position, and serves as a poise for the hammer, as will be very readily understood.

T represents a lever-arm, which is fulcrumed at its inner end to the cross-bar K. The said lever-arm is connected to the outer end of the operating-arm R by means of a link, U.

V represents a shaft or axle which connects the upper ends of the inclined arms H, and on the said shaft or axle is fulcrumed a hand-lever, W. A bail, X, is attached to the rock-shaft, the latter being free to rotate in the ends of the bail, and the said bail is provided at its upper side with a hoop which engages a ring or eye formed at the inner end of the hand-lever W, and thereby the bail is attached to the said hand-lever, and forms the medium whereby the cross-head carrying the lever-arm, the spring, and the hammer is connected to the lever W.

From the rigid shaft or axle V depends a segment-arm, Z, provided with a series of teeth. The lever-arm W has a spring-actuated bolt, A′, connected by rod B′ to a handle, C′, at the outer end of the lever W, the said spring-actuated bolt being adapted to engage the segment-arm, and thereby secure the lever W at any desired angle.

From the foregoing it will be understood that by means of the said lever-arm and the vertically-movable cross-head the hammer and its actuating devices may be raised or lowered.

The operation of our invention is as follows: The truck is wheeled to a point at a suitable distance from the post or pile to be driven, and the cross-head is raised or lowered by means of the lever W to such a height as will cause the hammer to strike fairly on the upper end of the post or pile when the hammer is moved downward to a horizontal position, as indicated in dotted lines in Fig. 1. The operator then grasps the lever T and forces the same downwardly, thus overcoming the equilibrium of the hammer and causing it to descend, against the tension of the spring S, upon the upper end of the post or pile. The spring immediately returns the hammer to its initial raised position while the lever T is being raised, and holds the hammer poised ready for another stroke, and the operation is re-

peated until the post or pile has been driven to a suitable depth in the ground. As the post is gradually driven downward, the cross-head will be correspondingly lowered from time to time by raising the outer end of the lever W, so as to cause the hammer to always strike squarely upon the upper end of the post or pile.

A machine thus constructed is adapted to be transported from one place to another with great facility, and will be found extremely useful in driving posts or piles and in blasting operations in mines and quarries.

Having thus described our invention, we claim—

1. In a post or pile driver, the combination of the frame having the vertical guiding-standards, the cross-head movable vertically between the said standards, the rock-shaft journaled to the cross-head, the hammer carried by the rock-shaft, the arm R, projecting from the rock-shaft, the spring S, connected to the rock-shaft and adapted to normally poise or raise the hammer, the lever T, pivoted to the cross-head, the link U, connecting the said lever to the cross-head, and the lever W, connected to the cross-head to raise and lower the same, substantially as described.

2. In a post or pile driver, the combination of the frame having the vertical guiding-standards, the cross-head movable vertically between the said standards, the rock-shaft journaled to the cross-head, the arm O, projecting from the rock-shaft and having the hammer P, the spring S, connected to the rock-shaft and adapted to normally raise or poise the hammer, the arm R, projecting from the rock-shaft, the lever T, pivoted to the cross-head, and the link U, connecting the said lever to the arm R, substantially as described.

3. The combination, in a post or pile driver, of the frame having the vertical guiding-standards G, the vertically-movable cross-head secured to the said standards, the spring-poised hammer pivotally connected to the cross-head, the operating-lever, also connected to the cross-head and to the hammer, for the purpose set forth, and the lever W, connected to the cross-head to raise and lower the same, and thereby raise or lower the hammer and its operating devices, the said lever having the detent to secure it at any desired angle, for the purpose set forth, substantially as described.

4. The truck mounted on wheels and provided with the vertical guide-standards G and the arms H, in combination with the vertically-movable cross-head secured between the standards G, and carrying the hammer and the operating devices therefor, and the lever W, pivoted between the arms H and connected to the cross-head, for the purpose set forth, substantially as described.

5. In a post or pile driver, the truck having the standards G, the shaft N, journaled therein, the hammer-arm O, secured to the shaft, the coiled spring S, also mounted on the same shaft to poise the hammer, the handle-lever T, and connecting-levers R U between the handle-lever and the shaft N, as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

ELMER WELSH.
ARTEMUS WELSH.

Witnesses:
J. H. CULLER,
R. G. LEEPER.